



Estimating the Cost to Implement the PLTW Pathway to Engineering Program

The cost to implement a PLTW program will vary from school district to school district. There are multiple reasons for the variation:

- Different schools have varying availability of equipment, supplies, and other materials required to implement the curriculum. The more items already available, the lower the cost will be to implement a program.
- There are three different PLTW STEM programs, each with different equipment requirements and consequent costs.
- There are cost differences between the various course selections within each high school program, as some courses require more expensive equipment. Similarly, there are different costs associated with each of the middle school Gateway To Technology (GTT) units. Schools may select different courses/units.
- The number of class sections offered for each high school course or GTT unit will affect the overall cost to the school.

Therefore the costs presented here are estimates and in order for schools to determine their actual costs an inventory of existing materials should be taken using the PLTW purchasing manual for the program being implemented. The manuals are available on the PLTW website at

<http://www.pltw.org/program-support/2011-2012-purchasing-manual>.

Estimated Cost to Implement the High School Pathway to Engineering Program

Minimum implementation is three courses including the two foundation courses, Introduction to Engineering Design (IED) and Principles of Engineering (POE). The minimum implementation for certification, which allows students to be eligible to earn college credit for the PLTW courses, is four courses. Each course is written for 175 days of 45-minute periods. The scheduling can be modified to fit the needs of the school, for example the class can meet for 90-minute periods daily for one semester.

The estimated cost to add the two foundation courses, IED and POE, to a school that has an existing Technology Education classroom and computers that meet PLTW specifications is \$21,145.

The cost of adding the third course required for the PLTW program will vary depending on the specialty course selected, ranging from \$5,420 to \$20,450.

The estimated cost to implement the two foundation courses, IED and POE, and one specialty course will range from \$26,565 if the specialty course is Civil Engineering and Architecture to \$41,595 if the specialty course is Computer Integrated Manufacturing.

Note: Most schools choose to implement the Engineering courses over multiple years.



The following items are included in this estimate:

- Two-weeks (80 hours) of Core Training in IED for one teacher with full room and board
- Two-weeks (80 hours) of Core Training in POE for one teacher with full room and board
- Two-weeks (80 hours) of Core Training in the specialty course for one teacher with full room and board
- Classroom equipment and consumables
- Equipment specific for the three courses
- Consumables specific for the three courses, enough for at least 20 students
- Required software
- Access to the curriculum for the three courses, including: teacher notes, lesson plans, key terms with definitions, crosswalks to National Standards, student handouts, instructional PowerPoints, scoring rubrics, and answer keys (provided at no charge to teachers who successfully complete the appropriate Core Training)
- Access to the PLTW Virtual Academy for continuing teacher professional development (provided at no charge to PLTW teachers)
- Access to the teacher discussion forums (provided at no charge to PLTW teachers)
- Access for PLTW students to the Northwest Evaluation Association MAP testing for science and mathematics (currently provided at no charge to PLTW students)
- Access to the End-of-Course Assessment for each course, including the college credit eligibility exam (currently provided at no charge to PLTW students)

The two tables below breakdown the actual costs to equip a PTE classroom and implement the various full-year courses. The classroom equipment and consumables are items that are used in multiple courses and can be used in multiple class sections. Equipment is a one-time purchase, whereas consumables will have to be replenished. The need for replenishment will vary depending on the number of students using the items. The estimate for the classroom consumables assumes four or five classes of 20 students meet in the classroom daily.

Table 1. Breakdown of specific costs to set-up a PTE classroom used for multiple class sections each day. The equipment and consumables are used for activities in multiple courses and are not specific to a course.

PTE Classroom Lab Set-up Costs	
Classroom Equipment	\$530
Software Purchase (LoggerPro)	\$180
Classroom Consumables	\$180
Annual Software Lease (Autodesk Design Suite)	\$3,195
Total	\$4,085
Additional costs if:	
Not originally a tech-ed classroom	\$1,520
Need to purchase computers, projector, printer, and scanner	\$18,710

In addition to the IED and POE foundation courses mentioned above, schools can choose from six specialty courses to design a program of study appropriate for their local community. **Schools must**



choose at least one course in addition to the two foundation courses to have a PLTW program and be considered a PLTW school, or choose at least two additional courses to be eligible for PLTW Certification.

The PLTW Engineering specialty courses include: Digital Electronics, Aerospace Engineering, Biotechnical Engineering, Civil Engineering and Architecture, Computer Integrated Manufacturing, and Engineering Design and Development.

Table 2. Breakdown of specific costs to implement each PTE course once the classroom is equipped. These are the costs to purchase the equipment and consumables that are specific for each course, and are in addition to the cost to set-up the PTE classroom. The consumable costs are for a single class section of 20 students.

	Introduction to Engineering Design	Principles of Engineering	Digital Electronics	Aerospace Engineering
Teacher Training includes Room & Board	\$3,400	\$3,400	\$3,400	\$3,400
Equipment, course specific	\$485	\$9,355	\$6,415	\$7,925
Consumables, course specific	\$190	\$230	\$520	\$810
Annual Lease for Additional Software	\$0	\$0	\$670	\$0
Total	\$4,075	\$12,985	\$11,005	\$12,135

	Biotechnical Engineering	Civil Engineering and Architecture	Computer Integrated Manufacturing	Engineering Design and Development
Teacher Training includes Room & Board	\$3,400	\$3,400	\$3,400	\$3,400
Equipment, course specific	\$3,435	\$1,910	\$14,590	\$520
Consumables, course specific	\$640	\$110	\$550	\$500
Annual Lease for Additional Software	\$0	\$0	\$1,910	\$0
Total	\$7,475	\$5,420	\$20,450	\$4,420